WE CLAIM:

1. A method of synthesizing a suppressed carrier optical communications signal, the method comprising steps of:

providing an optical modulator adapted for complex modulation of a continuous wave (CW) optical signal;

biasing the optical modulator to a bias point proximal a zero-crossing point of an E-field response of the of the modulator; and

driving excursions of the E-field response about the bias point using a complex input signal.

2. A method as claimed in claim 1, wherein the bias point of offset from the zero-crossing point, a magnitude and direction of the offset being selected so as to at least partially cancel leakage of the CW optical signal through the optical modulator.

3. A method as claimed in claim 1, wherein the optical modulator comprises a nested Mach-Zehnder architecture capable of independently modulating phase and amplitude of the CW optical signal.

4. A method as claimed in claim 1, wherein the complex input signal comprises a pair of orthogonal signal components.

5. A method as claimed in claim 4, wherein the pair of orthogonal signal components comprise an In-phase signal component $V_I(t)$ and a Quadrature signal component $V_Q(t)$.

6. A method as claimed in claim 5, wherein the optical modulator comprises an outer Mach-Zehnder modulator having a pair of parallel branches, each branch including a respective branch Mach-Zehnder modulator, and wherein the step of driving excursions of the E-field response comprises a step of driving each of the branch Mach-Zehnder modulators using a respective one of the In-phase and Quadrature signal components.

7. A method as claimed in claim 6, wherein the step of biasing the optical modulator comprises steps of:

inserting a respective dither signal into each of the orthogonal signal components, each dither signal having a respective unique frequency;

detecting signal components of the suppressed carrier optical communications signal corresponding to the dither signals; and

adjusting the bias point of the optical modulator using the detected components.

8. A method as claimed in claim 7, wherein the step of detecting signal components of the suppressed carrier optical communications signal comprises a steps of:

detecting a first signal component $[d_I(t)]^2$ having a frequency corresponding to that of a first one of the dither signals;

detecting a first signal component $[d_Q(t)]^2$ having a frequency corresponding to that of a second one of the dither signals; and

detecting a beat-frequency component $2\mathrm{Sin}(\theta q)d_I(t)d_Q(t)$ having a frequency corresponding to a beat frequency of the first and second dither signals.

9. A method as claimed in claim 8, wherein the step of adjusting the bias point of the optical modulator comprises steps of:

adjusting a phase angle between optical signals traversing the branches of the outer Mach-Zehnder modulator to minimize an optical power of the beat-frequency component;

adjusting respective values of the first and second dither signals to minimize an optical power of the corresponding first and second signal components $[d_I(t)]^2$ and $[d_Q(t)]^2$.